

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

STUDIES ON SPIROSTREPTOID MILLIPEDS. IX.
THE STATUS OF THE INDIAN GENUS
LEIOTELUS CHAMBERLIN¹

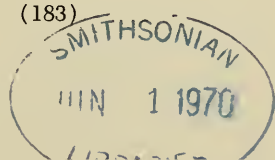
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One of the most intriguing of R. V. Chamberlin's legion of enigmatic generic names is *Leiotelus*, proposed in 1921 as a taxon of the family Odontopygidae and comprising the type genus of a monotypic new subfamily Leiotelinae.

Inasmuch as the description of *Leiotelus* and its type species *L. amballae* were not accompanied by illustrations of the male genitalia, these names fell promptly into a state of neglect and insofar as I know have never subsequently been mentioned in the literature. This is a remarkable situation in itself since the family Odontopygidae is of course strictly endemic to Africa, and the asserted existence of an Indian member of the group should have excited the greatest interest. Since 1921, however, the diplopod fauna of India was surveyed by Attems in 1936, and the family Odontopygidae subjected to careful revision by Dr. Otto Kraus (1960, 1966) without any account whatever being taken of *Leiotelus* by either author.

The type specimen of *L. amballae* is an adult male, taken at Ambala in Punjab, and is still preserved in the collection of the Museum of Comparative Zoology, Harvard University. Through the cooperation of Dr. H. W. Levi, I was recently enabled to restudy this specimen, and am glad to be able to dispose of the long-standing enigma concerning its taxonomic status. The species belongs not to the Odontopygidae but in

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fact is a member of the characteristically Indian family Harpagophoridae as might easily have been guessed both from its locality and the fairly explicit verbal account of the taxonomic characters!

FAMILY HARPAGOPHORIDAE ATTEMS, 1909
 SUBFAMILY HARPAGOPHORINAE DEMANGE 1961
 (= LEIOTELINAE CHAMBERLIN, 1921; NEW SYNONYMY)

The Harpagophoridae has been rendered by M. Demange into three subfamilies on the basis of the gonopod sternum. Without going into the internal classification of the family at the present time, I can only note that on the basis of gonopod characters, *Leiotelus amballae* clearly falls into any subfamilial, or even tribal, ensemble that might include *Harpagophora* itself, and Chamberlin's subfamily name is thus regarded as a subjective synonym of Demange's nominate subfamily which although many years younger, is based upon the type genus of the family.

It is difficult to imagine how *L. amballae* was ever identified as an odontopygid to begin with. The paraprocts lack the typical dorsal spination of that family, the epiproct is elongate and curved upward, and the gonopods are of perfectly normal harpagophorid pattern. Moreover, Chamberlin had described three new harpagophorids in the pages immediately preceding the proposal of *Leiotelus*.

As a point of fact, *L. amballae* is referable to a genus proposed by Carl several years prior to *Leiotelus*, and based upon a quite well-known Indian species.

Phyllogonostreptus Carl

Phyllogonostreptus Carl, 1918, Rev. Suisse Zool., vol. 26, p. 424. Type species, *Spirostreptus nigrolabiatus* Newport, 1844, by monotypy and original designation.

Leiotelus Chamberlin, 1921, Ann. & Mag. Nat. Hist., ser. 9, vol. 7, p. 67. Type species, *L. amballae* Chamberlin, 1921, by monotypy and original designation. New Synonymy!

This genus has experienced a somewhat variegated taxonomic history. Originally monotypic, it was justified by its author with the statement "Ce genre se distingue de tous les Harpagophoridae par l'absence complète d'épine ou autre saillie coxale aux gonopodes postérieurs [= telopodite] et par l'état réduit des pectinations du télopodite." *Phyllogonostreptus* was recognized on these bases by Attems in 1926, but later he (1936: 257) withdrew Carl's name into the synonymy of *Thyropygus* in the belief that the absence of a femoral spine was scarcely a generic character. In his 1936 key to species of *Thyropygus*, however, Attems took *nigrolabiatus* out at the first couplet, along with *serpentinus* Att., *broelemanni* Att., and *melinopus* Att., because of the lack of said spine. In his own work on Indian diplopods published in 1941, J. Carl con-

tinued to recognize *Phyllogonostreptus* as a valid genus, and in the following year Attems (1942: 90) reverted to the same opinion. He moreover brought additional species into the genus: *uniserialis* from Indochina, *segmentatus* from the Philippines, and the four taxa supposedly from Borneo: *serpentinus*, *melinopus*, *broelemanni*, and *bicornis*.²

The recent monographic account by M. Demange (1963) again reduced *Phyllogonostreptus* to monotypic status by relocating the above mentioned species to other genera (except for *bicornis*, which was not mentioned). Although the absence of a femoral spine is not *per se* a generic character (the spine being suppressed randomly among various other groups), when taken into account with the overall form of the gonopods it does contribute to the diagnostic appearance of those appendages *en suite*. I concur with Demange that *Phyllogonostreptus* is a valid genus containing up to the present only the South Indian species *nigrolabiatus*.

Phyllogonostreptus nigrolabiatus (Newport)

Spirostreptus nigrolabiatus Newport, 1844, Ann. & Mag. Nat. Hist., ser. 1, vol. 13, p. 269 (Holotype, Brit. Mus., from "India").—Pocock, 1892, Journ. Bombay Nat. Hist. Soc., vol. 7, p. 159.

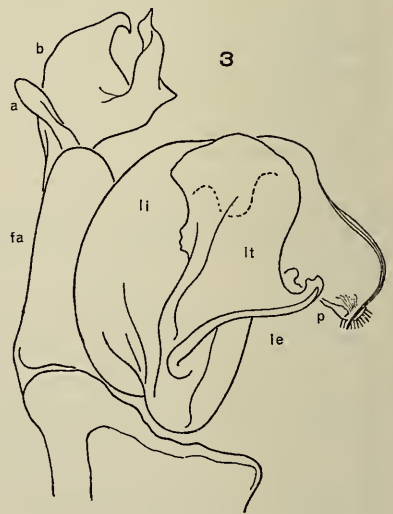
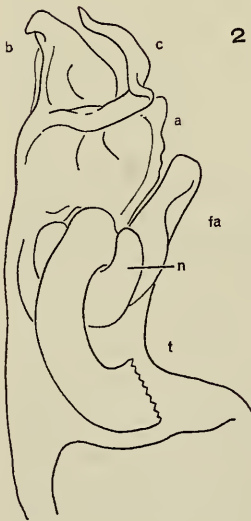
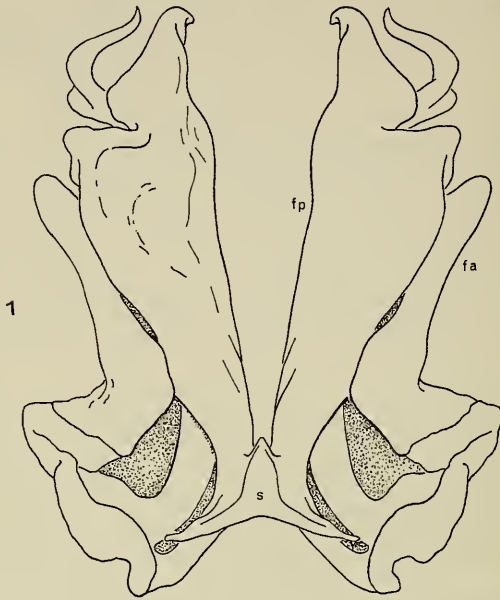
Phyllogonostreptus nigrolabiatus: Carl, 1918, Rev. Suisse Zool., vol. 26, p. 426.—Attems, 1942, Ann. Naturh. Mus. Wien, vol. 52, p. 91.—Demange, 1961, Mem. Mus. Nat. d'Hist. Natur., n. s., Ser. A, vol. 24, p. 190.

Thyropygus nigrolabiatus: Attems, 1936, Mem. Indian Mus., vol. 11, p. 259.

Notes: Thanks to the work of Carl, Attems, and especially Demange, this species is now well-known as regards its identity and gonopod structure. I can only add the verification, based upon the study of Newport's original type specimen in 1960, that Pocock's identification of his material (upon which later concepts of the species are founded) was entirely correct.

The distribution of *nigrolabiatus* remains very incompletely known. It has been recorded by Pocock from Madras (presumably the city) and by Carl from "Ceylon" without further particulars. Attems saw material from Madras and Rambha. Demange records specimens from the Sheveroy Hills, in Madras, from Pondichery (the French enclave), and

² It is perhaps unnecessary to allude to the utter unreliability of locality labels attached to the material taken in the East Indies by several collectors during the past century. As more cohesive and limited generic groups emerge from the great catch-all "genera" of Attems and others, distributional anomalies are easy to detect, such as the records for Borneo for taxa otherwise known only from Java and Sumatra. In particular, diplopods taken by Ida Pfeiffer supposedly in Borneo appear to be chiefly Sumatran in origin; those (such as *Thyropygus brevicaudatus* Att.) collected by Plason and labeled "Borneo or Celebes" doubtless came from neither of those islands but from Sumatra or Malaya instead. Borneo has in fact an impressive harpagophorid fauna of its own, the genera largely endemic once the spurious records have been eliminated.



from Asansol, West Bengal. Interestingly, it was not encountered by Carl in his extensive collecting in Nilgiris, Palnis, and Anaimalais, suggesting perhaps a coastal distribution.

The presence of the species in Ceylon has not been confirmed, to the best of my knowledge. Demange's record for Asansol is of considerable interest as being far-removed from the Madras localities, and perhaps a restudy of the specimens will show subspecific differences in structure.

***Phyllogonostreptus amballae* (Chamberlin) new combination**

Figures 1-4

Leiotelus amballae Chamberlin, 1921, Ann. & Mag. Nat. Hist., ser. 9, vol. 7, p. 67. (Holotype from "Amballa" [= Ambala, Punjab], India.)

Holotype: M.C.Z. 4856, adult male, fragmented, maximum diameter 8 mm. 57 segments.

Coloration altered by long preservation, at present light gray with the metasomites, legs, and antennae ferruginous brown, anal segment and paraprocts darker.

Head relatively small, of normal appearance, the epicranium finely striated, lower part of clypeus and labrum vertically rugulose, remainder of head smooth and polished. Mandibular stipes inflated laterally, produced ventrally into a prominent triangular, medially incurved lobe similar to that figured by Demange (1963: fig. 275-76) for *Fageostreptus hyatti*. Distal third of gnathochilarial stipes with a prominent sub-terminal oval nodosity. Antennae moderately long, basal articles glabrous, 2nd article longest; 4th and 5th short and nearly triangular in outline, 6th almost rectangular; 5th and 6th with prominent transversely reniform sensory area on the outer surface; 7th small, subhemispherical, its distal edge inturned between the four small sensory cones, and with a single small rounded sensory knob on its outer side.

Collum much wider than head, strongly narrowed down the sides behind level of mandibles but terminally enlarged and a prominent ventrally produced anterior corner present, surface of collum smooth and polished.

Body segments divided by a fine but sharply defined suture into a broad prozonite with numerous fine transverse striations and a shorter

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FIGS. 1-3. *Phyllogonostreptus amballae* (Chamberlin). 1, gonopods (telopodites not shown), oral aspect. 2, left gonopod coxa, with basal part of telopodite, aboral aspect. 3, right gonopod, lateral aspect. Abbreviations: a, b, c, distal lobes and processes of the posterior coxal fold (inner paragonocoel); fa, anterior coxal fold (outer paragonocoel); fp, posterior coxal fold; le, external lamella of telopodite; li, internal lamella; lt, transparent lamella; n, coxal nodosity at end of gonocoel; p, distal process of external lamella; s, sternum; t, telopodite.

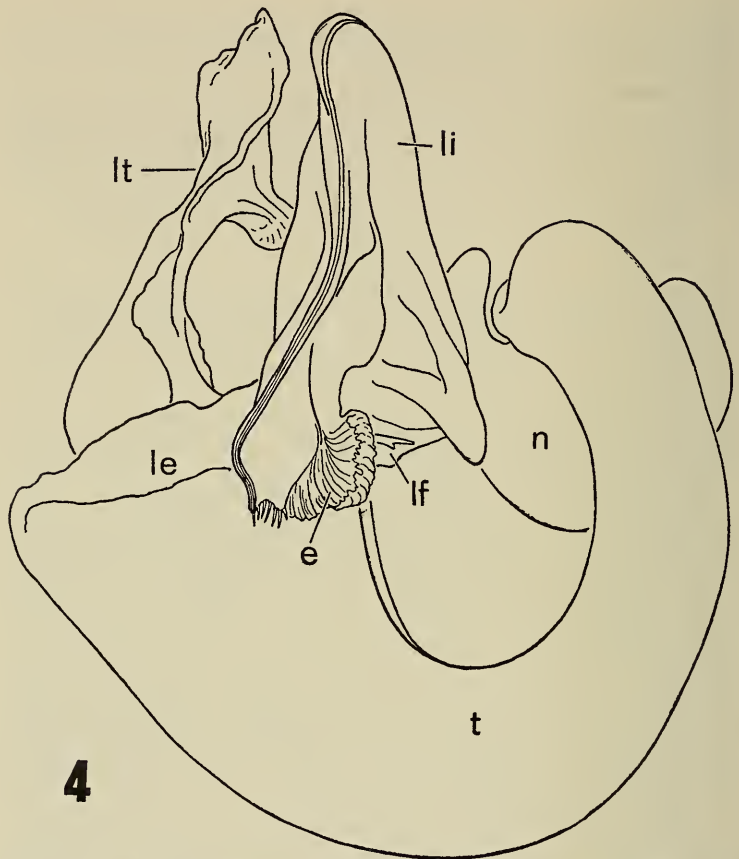


FIG. 4. *Phyllogonostreptus amballae* (Chamberlin), telopodite of right gonopod, aboral aspect. Abbreviations: e, hyaline cupulate lobe of internal lamella; lf, apical projection of intermediate distal process of the internal lamella; other abbreviations as in Figures 1-3.

metazonite, dorsally smooth, without punctations, becoming longitudinally striate below level of ozopores. Latter small, located in the metazonite, not in contact with the transverse suture.

Terminal segment produced into a short, upturned epiproct about equal in length to free edge of paraprocts, latter convex, smooth, without distinct free margination; hypoproct small, transverse, smooth, not fused with preceding segment.

Sterna smooth. Stigmata small, triangular, not extending laterally beyond level of distal end of coxae. Legs moderately long, the two distal

podomeres visible beyond sides of body from above, coxae of posterior pair of legs of each segment somewhat enlarged, their mesial surfaces strongly flattened, the distocaudal region produced into a low blunt conical process. Legs virtually glabrous, ventral macrosetae 1-1-1-0-0-5 (tarsal setae usually 3 on the anterior side and 2 on the posterior), a prominent macroseta above the base of each tarsal claw. Ventral pads present on the postfemora and tibiae of all legs.

First and second pairs of legs removed (presumably by Chamberlin) and no longer with the specimen.

Gonopods (Figs. 1-4) generally similar to those of *P. nigrolabiatus* as illustrated by Demange (1961). Coxae fused basally with a small triangular sternal remnant (s). Anterior fold (fa) of coxa displaced laterally, exposing base of telopodite. Posterior fold (fp) enlarging distally from point of fusion with sternum, the apical fourth abruptly narrowed and set off as a subtriangular, hamate, caudally curved process (b); aboral side of distal third with an elongate, slender, sinuously flexed branch (c) considerably better-developed than that of *nigrolabiatus*. Aboral face of gonopod with a prominent subreniform nodosity (n) subtending the point of exit of the telopodite. Latter relatively short and massive (figs. 3, 4), the femoral division without trace of spine, the more distal extent curving proximad and thence laterad, laterally forming a broad semicircular blade divided into two major regions as in *nigrolabiatus*. Internal lamella (li) the larger and more prominent, and carrying the seminal groove; latter running out terminally on a small thin plate with six or seven small marginal spines, laterad to which is a cupulate, hyaline lobe (e); mesad to these structures the internal lamella is produced into an acute projecting lobe (d) and a small acuminate process (lf), the latter visible only in aboral aspect. External lamella smaller, ending in a truncate lobe (p), and produced ventrally into a prominent spatulate transparent lamella (lt) which carries a smaller retrorse secondary lobe on its median side.

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